

an amount in the range of about 0.1% to about 10% by weight of the total composition.

REMARKS

The claims were 1-14 and 16-34, with only Claim 1 being independent. Claims 2 and 3 have been cancelled. Thus, Claims 1, 4-14 and 16-34 are pending.

Claims 1, 11, 13-14 and 20-21 have been amended, in part to correct typographical errors and change the dependency from now cancelled claims and in part for the reasons set forth below.

The Specification has been amended to correct a variety of typographical and grammatical errors, and to provide the related application data, to which Applicants claim the benefit of the filing date of one or more earlier filed applications in the United States, as evidenced by their executed Declaration.

Priority

As noted, the Specification has been amended to include related application data. The application thus complies with 35 U.S.C. § 120 regarding benefit of the filing date of one or more earlier filed applications in the United States. Applicants respectfully request the Examiner

expressly acknowledge such compliance in the issuance of her next Action.

New Matter Objection

The Action states that the Preliminary Amendment is objected to under 35 U.S.C. § 132 for allegedly introducing new matter into the application. The Action points out: "The added material which is not supported by the original disclosure is as follows: the paragraphs describing sulfur-containing compounds inserted on page 12."

Applicants respectfully traverse this objection, and request reconsideration and withdrawal thereof.

It is well settled that "[a]n application for patent when filed may incorporate 'essential material' by reference to (1) a U.S. patent" M.P.E.P. § 608.01(p), I.¹ The M.P.E.P. states that:

'Essential material' is defined as that which is necessary to (1) describe the claimed invention, (2) provide an enabling disclosure of the claimed invention, or (3) describe the best mode (35 U.S.C. 112).

Applicants have amended the application in the Preliminary Amendment as noted therein to include a more complete description of sulfur containing compounds.

¹ Applicants reference to M.P.E.P. § 608.01(p) and (v) in the February 20, 2002 Preliminary was an inadvertant error;

Applicants respectfully disagree with the Examiner's conclusion at page 2 of the Action, at which she states: "This application ... adds and claims additional disclosure not present in the prior application." In fact, the disclosure is present in the prior application *through an express incorporation by reference* to a prior U.S. patent. Now that the present claims have been focussed on an aspect of the invention, for which such disclosure describes and enables the present invention, Applicants have amended the Specification to include relevant portions of such material expressly incorporated by reference.

The introduction and entry of such an amendment are well accepted practices under U.S. patent procedures, and many U.S. patents have been granted through such an amendment without facing the objection lodged in the Action. For instance, see U.S. Patent Nos. 6,143,209, 5,611,966, and 5,424,865.

Accordingly, no new matter has been added, and the Section 132 objection should no longer be maintained.

Section 112 Rejections

Claims 1-9, 11-14, 16-19 and 22-36 stand rejected under 35 U.S.C. § 112, first and second paragraphs, as allegedly not enabling "for any known metallocene substance

reference should have been solely to M.P.E.P. § 608.01(p).

and any known photoinitiator" and as allegedly being indefinite, respectively, for the reasons given at pages 3 and 4 of the Action.

Applicants' cancellation of Claims 2 and 3 renders the Section 112 rejections of these claims moot. As regards the remaining rejected claims, Applicants respectfully traverse these rejections, and address each rejection in turn.

First Paragraph

As regards the Second 112, first paragraph, rejections, the position set forth in the Action is simply inconsistent with this examiner's thinking in allowing to pass to issue the parent applications. That is, U.S. Patent No. 5,922,783 provides in Claim 1 thereof the term metallocene without any further recitation as to that component, and the photoinitiator is recited as a member of a Markush group. And U.S. Patent No. 6,433,036 provides in Claim 1 thereof the term photoinitiator without any mention as to its identity (other than reciting that the amount is effective to render the composition capable of photocuring in air upon exposure to at least one type of electromagnetic radiation), and the metallocene is recited as being within a given structure.

In addition, the Specification sets forth a plethora of each of the metallocenes and photoinitiators that are suitable for use in the practice of the present invention. To the extent the Action requires a precise identification of the metallocene and/or photoinitiator for compliance with Section 112, first paragraph, such requirement simply is inconsistent with well established principles of U.S. patent jurisprudence.

Moreover, Applicant respectfully submits that in combination with the sulfur-containing compound (recited in Markush format) as component (d) of the inventive composition, enablement is indeed provided as to the invention as a whole -- that is, defined by the entirety of the claim.

Accordingly, the Section 112, first paragraph, rejections should no longer be maintained, and reconsideration and withdrawal thereof are respectfully requested.

Second Paragraph

Applicants understand the last paragraph of page 3 of the Action to mean that the Examiner reads the two European patent documents and the U.S. patent document cited to speak to cyanoacrylate compositions containing a

metallocene which are photocurable without the presence of a photoinitiator.

Applicants' present claims require four distinct components, one of which being a metallocene and another of which being a photoinitiator. In order to reduce the number of issues raised in the Action, but without conceding the propriety of the rejection, Applicants have amended Claim 1 to more specifically set forth the photoinitiator as a separate component from the metallocene.

Applicants have also amended Claim 1 to include the term "monomer" after -- 2-cyanoacrylate --, the term "component" after -- metallocene -- and after -- photoinitiator --. These amendments to Claim 1 address the rejection of Claims 4 and 5 as regards the term "monomer", and place Claims 6, 7, 9 and 12 in a more consistent format with Claim 1 as regards the term "component" used in conjunction with the metallocene, and Claim 14 in a more consistent format with Claim 1 as regards the term "component" used in conjunction with the photoinitiator.

As regards the rejections to Claims 6, 7, 9 and 11 over the objected to phrases in the third paragraph of page 4, Applicants respectfully invite the Examiner's attention to U.S. Patent No. 6,433,036, which includes the same phrases in Claim 1 (and Claims 2, 3 and 5) thereof as those objected to

here. Applicants respectfully submit that the Patent and Trademark Office determined in a related case that the phrases were acceptable in a similar context and should do the same here. Otherwise, patent applicants will have little comfort in prosecuting cases where consistency of examination may differ from case to case (even in related cases and even from the same examiner).

Applicants' file copy of the application shows Claim 11 to already include the proper Markush language to which the Examiner refers in the fourth paragraph of page 4 of the Action. Applicants respectfully request the Examiner to clarify her rejection of that claim in that regard.

As regards the rejection to Claim 12 over the objected to phrase in the fifth paragraph of page 4, Applicants respectfully invite the Examiner's attention to U.S. Patent No. 5,922,783, which includes the same phrase in Claim 11 thereof as that objected to here. Again, Applicants believe that the Patent and Trademark Office approved of the usage of the term in a parent application, then it should do so here as well.

Accordingly, the Section 112, second paragraph, rejections should no longer be maintained, and reconsideration and withdrawal thereof are respectfully requested.

Section 103 Rejections

Claims 1-7, 11-14, 16-22, 26-34 and 36 stand rejected under 35 U.S.C. § 103(a) as allegedly being obvious over European Patent Document 769 721 (Mikune) in view of U.S. Patent No. 5,328,944 (Attarwala) for the reasons given at pages 4-6 of the Action; Claims 1-7, 11-14, 16-19, 22, 26-30, 32 and 34 stand rejected under Section 103(a) as allegedly being obvious over Mikune in view of Attarwala, and further in view of U.S. Patent No. 4,707,432 (Gatechair) for the reasons given at pages 6 and 7 of the Action; and Claims 23-26 and 30-32 stand rejected under Section 103(a) as allegedly being obvious over Mikune in view of Attarwala, and further in view of Coover for the reasons given at page 7 of the Action.

Applicants' cancellation of Claims 2 and 3 renders those rejections moot. Applicants traverse the remaining Section 103 claim rejections.

Applicants believe it will benefit the Examiner in her further consideration of this application to review for her that which Applicants have claimed in this aspect of their invention.

The invention as claimed is directed to broadly a composition comprising: a 2-cyanoacrylate monomer; a

metallocene component; a photoinitiator component other than the metallocene component; and a sulfur-containing compound. The cyanoacrylate is of the formula $H_2C=C(CN)-COOR$, where R is one of C_{1-15} alkyl, alkoxyalkyl, cycloalkyl, alkenyl, aralkyl, aryl, allyl and haloalkyl groups. The photoinitiator is present in a polymerisingly effective amount to render the composition capable of photocuring in air upon exposure to at least one type of electromagnetic radiation selected from ultraviolet light, visible light, electron beam, x-ray and infrared radiation. And the sulfur-containing compound is one or more of sulfonates, sulfinates, sulfates, and sulfites.

The Actions cites a number of different documents against the pending claims, the primary one of which is Mikune.

Mikune is directed to the use of a photocurable cyanoacrylate composition, which includes a cyanoacrylate in combination with a metallocene based on a group VIII metal and a cleavage type photoinitiator.

While Mikune makes passing reference to the addition of specific additives, including as the Examiner points out heat stabilizers at page 10, line 59 thereof, nowhere in Mikuni is it disclosed, taught or suggested that the sulfur containing compounds that Applicants have recited in Claim 1, could be used, or would be desirable for use,

therein, let alone that inclusion of such sulfur containing compounds could improve the physical properties thereof.

Attarwala is used as secondary reference in the obviousness formula developed in the Action.

Attarwala is directed to cyanoacrylate monomer adhesive formulations that include sulfur containing compounds to improve the thermal resistance of the cured adhesive formulation.

Attarwala does not disclose, teach or suggest:

-- the ability of the thermally resistant cyanoacrylate adhesive formulations to be curable by exposure to radiation in the electromagnetic spectrum;

-- the addition of a metallocene component; or

-- the addition of a photoinitiator other than the metallocene, or

that it would be desirable for Attarwala's thermally resistant cyanoacrylate compositions to be photocurable, to include a metallocene (for any reason), or to include a photoinitiator.

In order to render obvious the invention as presently claimed based on the cited documents of record, the Action must provide in properly combinable documents:

A composition with

-- a cyanoacrylate

- a metallocene
- a photoinitiator
- one or more sulfur-containing compounds

selected from sulfonates, sulfinates, sulfates, and sulfites.

Simply put, while Mikune discloses the first three components and refers generally to heat stabilizers and Attarwala discloses the first and fourth component, there is no disclosure, teaching or suggestion to combine the teachings of the two documents at the time the invention was made.

Claim rejections cannot be predicated on the mere identification in the documents of record of individual components of the recitations in the claimed combination; rather, particular findings must be made as to why the skilled artisan, with no knowledge of the claimed invention, would have selected the specific components for combination in the manner claimed. In re Kotzab, 55 USPQ2d 1313, 1318 (Fed. Cir. 2000).

Even if some disclosure, teaching or suggestion was present, there was no reasonable explanation of success in reaching the claimed combination.

The inventive photocurable cyanoacrylate composition is a sensitive system, even more so than a conventional cyanoacrylate composition, in that the addition

of agents to perform certain functions may have adverse effects on the stability, for instance, which may be dramatic. Thus, one would not have looked to add to a cyanoacrylate, first a combination of the metallocene/photoinitiator package to render the composition photocurable and next a sulfur containing compound, absent some express suggestion to do so.

Rather, given Mikune and looking at Attarwala, it may have seemed "obvious to try" to include one or more certain sulfur containing compounds to confer thermal resistance properties to a photocured cyanoacrylate composition, however that is not the standard by which patentability is measured under Section 103. And in view of the sensitivity toward fast reaction of cyanoacrylates (noted for instance in the Specification in the Background of the Invention), and the unpredictability of cyanoacrylates in terms of establishing shelf life stability on the one hand and fast reactivity on the other, it would not have been obvious to provide a sulfur containing compound to a cyanoacrylate that already had a metallocene/photoinitiator package to permit photocuring.

Alternatively, one of ordinary skill in the art would not have thought to combine the teachings of the cited references at the time the invention was made unless given

reason to do so, such as by reference to the present Specification which provides that guidance. However, that approach would require impermissible hindsight.

Thus, Applicants respectfully submit that one could only have drawn the conclusion that the combination of Mikune and Attarwala, assuming only for the sake of argument that such combination is proper, renders the claims obvious based on a hindsight reconstruction of the invention as claimed, using Applicants' Specification itself as a tool to weave together the obviousness conclusion.

Moreover, Applicants have studied the affect of the addition of ethylene sulfite (one of the expressly recited sulfur containing compounds) on ethyl-2-cyanoacrylate and on a photocurable cyanoacrylate composition comprising ethyl-2-cyanoacrylate in combination with ferrocene as a metallocene and "IRGACURE" 819 [bis(2,4,6-trimethyl benzoyl) phenyl phosphine oxide] as a photoinitiator and determined that the addition of ethylene sulfite to the photocurable cyanoacrylate composition improved the shelf life stability significantly (measured as a function of the increase of viscosity at room temperature over time).

More specifically, experiments have been conducted in which formulations of 10% PMMA-thickened ethyl-2-cyanoacrylate (Sample A), 10% PMMA-thickened ethyl-2-

cyanoacrylate together with 0.005% ferrocene and 0.25% "IRGACURE" 819 (Sample B), and 10% PMMA-thickened ethyl-2-cyanoacrylate together with 0.005% ferrocene and 0.25% "IRGACURE" 819 and 0.05% ethylene sulfite (Sample C) were prepared and evaluated for shelf life stability using an accelerated heat aging technique. In these experiments, Samples A-C were placed in glass tubes in a temperature-controlled oven at 82°C, and the number of days to gellation was measured. Sample A was observed to gel to a state of non-flowability after 25 days at that temperature condition; Sample B gelled after 7 days; and Sample C gelled after 10 days.

Thus, while performing not as well as Sample A without the photoinitiating system or the ethylene sulfite, Sample C, with ethylene sulfite, demonstrated a nearly 43% increase in stability as compared to Sample B, without the ethylene sulfite.

In addition, experiments have been conducted in which formulations of 9.8% PMMA-thickened ethyl-2-cyanoacrylate (Sample D), 9.8% PMMA-thickened ethyl-2-cyanoacrylate together with 0.01% ferrocene and 0.5% "IRGACURE" 819 (Sample E), and 9.8% PMMA-thickened ethyl-2-cyanoacrylate together with 0.01% ferrocene and 0.5% "IRGACURE" 819 and 0.025% ethylene sulfite (Sample F) were

prepared and evaluated as above.

Here, Sample D gelled after 18 days at that temperature condition; Sample E gelled after 3 days; and Sample D gelled after 6 days.

Thus, while performing not as well as Sample D without the photoinitiating system or the ethylene sulfite, Sample F, with ethylene sulfite, demonstrated a 50% increase in stability as compared to Sample E, without the ethylene sulfite.

Accordingly, while Applicants do not concede that a case of *prima facie* obviousness has been established in the Action, the information provided above sufficiently rebuts any such case, in any event.

The Action also uses Gatechair as a tertiary reference in combination with Mikune and Attarwala.

Gatechair, as described in the Specification, speaks to a free radical polymerizable composition which includes (a) polymerizable partial esters of epoxy resins and acrylic and/or methacrylic, and partial esters of polyols and acrylic acid and/or methacrylic acid, and (b) a photoinitiator blend of a cyclopentadienyl iron complex and a sensitizer or photoinitiator, such as an acetophenone.

Gatechair adds nothing to the obviousness formula advanced in the Action.

While one of the chemicals to which Gatechair refers is in part an acrylate, cyanoacrylates which are used in the inventive compositions herein, have quite disparate properties and have developed as separate class of chemicals, particularly in the adhesives industry. Thus, the acrylate- and epoxy-containing compositions of Gatechair are not the cyanoacrylates used by Applicant. Therefore, whether Gatechair's photoinitiator is substitutable for the photoinitiator disclosed in Mikune is irrelevant. Also, for the sake of discussion, while motivation to combine the disclosure of these patent documents may exist in the context of acrylate chemistry, such motivation does not exist in the context of cyanoacrylate chemistry, as neither Mikune nor Gatechair indicates that the chemistries are interchangeable. Accordingly, no suggestion or motivation exists to combine Gatechair with Mikune or Attarwala.

Lastly, Coover is used as a tertiary reference against Claims 23-26 and 30-32. Coover, also as described in the Specification, relates to cyanoacrylates generally, in which they are described as quick-setting materials which cure to clear, hard glassy resins, useful as sealants, coatings, and particularly adhesives for bonding together a variety of substrates.

Coover does not teach or suggest the ability of curing cyanoacrylates through exposure to radiation in the electromagnetic spectrum, let alone the addition of a particular sulfur containing compound to achieve any desired effect.

Double Patenting

Section 101 Double Patenting

Claim 20 stands rejected under 35 U.S.C. § 101 as allegedly claiming the same invention as Claim 4 of U.S. Patent No. 5,922,783.

Applicants traverse this double patenting rejection.

The Examiner is reminded that while Claim 20 recites comparable materials in comparable amounts to Claim 4 of the '783 patent, Claim 20 requires a fourth component in the composition -- a sulfur containing compound.

Accordingly, this double patent rejection should no longer be maintained, and reconsideration and withdrawal thereof are respectfully requested.

Obviousness Type Double Patenting

Claims 1-14 and 16-36 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as allegedly being unpatentable over:

-- Claims 1-9, 11-14 and 16-34 of co-pending U.S. Patent Application No. 10/094,816 in view of Attarwala for the reasons given in the paragraph bridging pages 8 and 9 of the Action;

-- Claims 1-20 of U.S. Patent No. 5,922,783 in view of Attarwala for the reasons given at page 9 of the Action;

-- Claims 1-20 of U.S. Patent No. 5,922,783 in view of Attarwala, and further in view of Mikune for the reasons given in the paragraph bridging pages 9 and 10 of the Action; and

-- Claims 1-20 of U.S. Patent No. 5,922,783 in view of Attarwala, and further in view of Coover for the reasons given at page 10 of the Action.

Applicants traverse these double patenting rejections, as well.

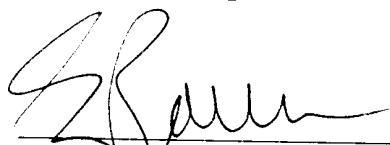
Nevertheless, in view of Applicants desire to advance prosecution on the merits but without conceding the propriety of the bases for these double patenting rejections, Applicants are prepared to submit a Terminal Disclaimer to

CONCLUSION

In view of the above, favorable reconsideration and passage to issue of the present case are respectfully requested.

Applicants' undersigned attorney may be reached by telephone at (860) 571-5001, by facsimile at (860) 571-5028, or by email at steve.bauman@loctite.com. All correspondence should continue to be directed to the address given below.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE TO CLAIMS

1. (Twice Amended) A composition comprising:

(a) a 2-cyanoacrylate monomer of the formula $H_2C=C(CN)-COOR$, wherein R is selected from the group consisting of C_{1-15} alkyl, alkoxyalkyl, cycloalkyl, alkenyl, aralkyl, aryl, allyl and haloalkyl groups,

(b) a metallocene component,

(c) a polymerisingly effective amount of a photoinitiator component other than the metallocene component to render the composition capable of photocuring in air upon exposure to at least one type of electromagnetic radiation selected from the group consisting of ultraviolet light, visible light, electron beam, x-ray and infrared radiation, and

(d) [a] one or more sulfur-containing compounds selected from the group consisting of sulfonates, sulfinates, sulfates, and sulfites.

Cancel Claims 2 and 3, without prejudice or disclaimer of that which was defined thereby.

11. (Amended) The composition according to Claim 1, wherein the metallocene component is selected from the group consisting of diaryl phosphino metal-complexed ferrocenes, bis-alkyl ferrocenes, and $M_e[CW_3-CO-CH=C(O^-)-$

$CW'_3]_2$, wherein M_e is selected from Fe, Ti, Ru, Co, Ni, Cr, Cu, Mn, Pd, Ag, Rh, Pt, Zr, Hf, Nb, V and Mo, and W and W' may be the same or different and may be selected from H and halogen.

13. (Amended) The composition according to Claim 1, wherein the metallocene component is ferrocene.

14. (Twice Amended) The composition according to Claim 1, wherein the photoinitiator component is selected from the group consisting of 1-hydroxycyclohexyl phenyl ketone, 2-methyl-1-2-morpholino propan-1-one, benzophenone, 2-benzyl-2-N,N-dimethylamino-1-(4-morpholinophenyl)-1-butanone, 2,2-dimethoxy-2-phenyl acetophenone, bis(2,6-dimethoxybenzoyl-2,4,4-trimethyl pentyl) phosphine oxide, 2,4,6-trimethylbenzoyldiphenyl-phosphine oxide, bis(2,4,6-trimethyl benzoyl) phenyl phosphine oxide, 2-hydroxy-2-methyl-1-phenyl-propan-1-one, alkyl pyruvates, aryl pyruvates and combinations thereof.

20. (Amended) The composition according to Claim [2] 1, wherein the cyanoacrylate component includes ethyl-2-cyanoacrylate which is present in an amount within the range of about 97.9% by weight to about 99.4% by weight of the total composition, the metallocene component is ferrocene

which is present in an amount of about 0.1% by weight of the total composition, [and] the photoinitiator component includes the combination of bis(2,6-dimethoxybenzoyl-2,4[-],4-trimethyl) pentyl phosphine oxide and 2-hydroxy-2-methyl-1-phenyl-propan-1-one which is present in an amount in the range of about 0.5% to about 2% by weight of the total composition, and the sulfur-containing compound is present in an amount in the range of about 0.1% to about 10% by weight of the total composition.

21. (Amended) The composition according to Claim [2] 1, wherein the cyanoacrylate component includes: ethyl-2-cyanoacrylate which is present in an amount within the range of about 98.715% to about 98.75% by weight of the total composition and BF_3 in an amount within the range of about 0.04% to about 0.075% by weight of the total composition, the metallocene component is ferrocene which is present in an amount of about 0.02% by weight of the total composition, [and] the photoinitiator component includes the combination of bis(2,6-dimethoxybenzoyl-2,4[-],4-trimethyl) pentyl phosphine oxide and 2-hydroxy-2-methyl-1-phenyl-propan-1-one which is present in an amount of about 1.2% by weight of the total composition, and the sulfur-containing compound is present in an amount in the range of about 0.1% to about 10% by weight of the total composition.

VERSION WITH MARKINGS TO SHOW CHANGES MADE TO SPECIFICATION

Replace the paragraph at page 1, line 11 with:

Cyanoacrylates generally are quick-setting materials which cure to clear, hard glassy resins, useful as sealants, coatings, and particularly adhesives for bonding together a variety of substrates [see e.g., H.V. Coover, D.W. Dreifus and J.T. O'Connor, "Cyanoacrylate Adhesives" in Handbook of Adhesives, 27, 463-77, I. Skeist, ed., Van Nostrand Reinhold, New York, 3rd ed. (1990)].

Replace the first four lines of page 7, beginning at line 1 with:

where R_1 and R_2 may be the same or different and may occur at least once and up to as many as four times on each ring in the event of a five-membered ring and up to as many as five times on each ring in the event of a six-membered ring;

Replace the paragraph at page 9, line 10 with:

And bis-alkylmetallocenes, for instance, bis-alkylferrocenes (such as diferrocenyl ethane, propanes, butanes and the like) are also desirable for use herein, particularly since about half of the equivalent weight of the material (as compared to a non-bis-metallocene) may be employed to obtain the sought-after results, all else being

unchanged. Of [the] these materials, diferrocenyl ethane is particularly desirable.

Replace the first sixteen lines of page 10, beginning at line 1 with:

"IRGACURE" 184 (1-hydroxycyclohexyl phenyl ketone), 907 (2-methyl-1-[4-(methylthio)phenyl]-2-morpholino propan-1-one), 369 (2-benzyl-2-N,N-dimethylamino-1-(4-morpholinophenyl)-1-butanone), 500 (the combination of 1-hydroxy cyclohexyl phenyl ketone and benzophenone), 651 (2,2-dimethoxy-2-phenyl acetophenone), 1700 (the combination of bis(2,6-dimethoxybenzoyl-2,4[-],4-trimethyl pentyl) phosphine oxide and 2-hydroxy-2-methyl-1-phenyl-propan-1-one), and 819 [bis(2,4,6-trimethyl benzoyl) phenyl phosphine oxide] and "DAROCUR" 1173 (2-hydroxy-2-methyl-1-phenyl-1-propane) and 4265 (the combination of 2,4,6-trimethylbenzoyldiphenyl-phosphine oxide and 2-hydroxy-2-methyl-1-phenyl-propan-1-one); and the visible light [blue] photoinitiators, dl-camphorquinone and "IRGACURE" 784DC. Of course, combinations of these materials may also be employed herein.

Replace the paragraph bridging pages 17 and 18, beginning at page 17, line 25 with:

The composition-coated substrate may be positioned within an electromagnetic radiation curing apparatus, such as the "ZETA" 7200 ultraviolet curing chamber, equipped with an

appropriate source of electromagnetic radiation, such as ultraviolet radiation, at an appropriate distance therefrom, such as within the range of about 1 to 2 inches (2.54 to 5.08 cm), with about 3 inches (7.62 cm) being desirable. As noted above, the composition-coated substrate may remain in position or may be passed thereunder at an appropriate rate, such as within the range of about 1 to about 60 seconds per foot, with about 5 seconds per foot being desirable. Such passage may occur one or more times, or as needed to effect cure of the composition on the substrate. The length of exposure may be in the range of a few seconds or less (for one time exposure) to tens of seconds or longer (for either a one time exposure or a multiple pass exposure) if desired, depending on the depth of the composition to be cured and of course on the components of the composition themselves.

Replace the paragraph at page 18, line 12 with:

The reaction product of the photocurable composition may be prepared by dispensing in low viscosity or liquid form a photocurable composition in accordance with the present invention onto a substrate and mating that substrate with a second substrate to form an assembly. Thereafter, exposure to electromagnetic radiation on at least one substrate of the assembly for an appropriate period of time

should transform the photocurable composition into an adhesive reaction product.

Replace the first five lines of page 25, beginning at line 1 with:
formed therefrom. Each of these formulations (i.e., Sample Nos. 7-10) [were] was allowed to cure completely for a period of time of about 24 hours after initial exposure to ultraviolet light. The shear strength of the reaction products formed from those cured formulations is represented in Table 2b.

Replace the paragraph bridging pages 26 and 27, beginning at page 26, line 37 with:

The formulations were then applied to acrylic substrates, both of the UV absorbing and the UV transmitting type. The formulations were applied to two sets of test piece specimens in triplicate of both UV absorbing acrylic substrates and UV transmitting acrylic substrates, which were mated to form test piece assemblies. The so-formed assemblies were then positioned in the UV curing chamber and exposed to UV radiation for the following time periods: about 1, 2 and 5 seconds. Thereafter, the test piece assemblies were maintained at ambient temperature conditions for a period of time of about 1 to 3 minutes and shear strength measurements of each test piece assembly were determined

using the Instron Universal tester, as described in Example 1, supra. The second set of triplicate specimens was allowed to cure further at ambient temperature conditions for a period of time of about 24 hours. Failure in these specimens may occur due either to substrate failure (e.g., substrate fracture), cohesive failure (e.g., where a portion of the photocurable composition separates due to the applied force on surfaces of both substrates) or adhesive failure (e.g., where the composition separates due to the applied force on a surface of one substrate).

Replace the paragraph at page 31, line 24 with:

In Table 3, Cp_2 represents dicyclopentadienyl and Py_2 represents bis(2-pyridyl). In addition, to the ethyl-2-cyanoacrylate has been added about 50 ppm of BF_3 and about 1000 ppm of hydroquinone to minimize premature [onionic] anionic polymerization and free-radical formation, respectively.

Replace the paragraph at page 32, line 7 with:

The induction time and peak max time is the time of UV exposure required to induce a photo-curing reaction and to reach a reaction maximum, respectively. These data are measured by onset and peak time of the reaction enthalpy (or exothermic photo-curing reaction). Higher enthalpy

[includes] indicates the sample has a greater reactivity. Of course, a faster curing sample will have a shorter induction time, a peak max time and a higher enthalphy. For example, Sample 11 required 1.1 seconds of such UV exposure to induce UV curing, 4 seconds to reach a UV curing reaction maximum and generated 164 J/G of exotheric heat.

Replace the paragraph at page 35, line 9 with:

In addition, with respect to tubesets, intravenous sets, fluid delivery and withdrawal sets (such as drug delivery and blood withdrawal sets) and suction tubes are but a few examples of [tubsets] tubesets for the medical industry which may be manufactured with the composition of this invention.